

C<sup>2</sup>  
In the step of forming a latent image on the surface of the plate material by irradiating it with light having an energy level higher than a band gap energy level of the titanium oxide (this step is hereinafter referred to as "image writing step"), the incorporation of a group VIB or IVA metal or an oxide thereof in the surface of the coat layer containing the titanium oxide photocatalyst or in the photocatalyst phase allows reduction of the energy required to convert the hydrophobic surface to the hydrophilic surface (this energy is hereinafter referred to as "plate material sensitivity").

[Page 9, beginning at line 9, please amend the paragraph to read as follows:

C<sup>3</sup>  
A sixth aspect of the present invention is a printing plate material as in the fifth aspect, in which the group VIB metal is any of W, Mo, and Cr.

[Page 9, beginning at line 12, please amend the paragraph to read as follows:]

A seventh aspect of the present invention is a printing plate material as in the fifth aspect, in which the group IVA metal is any of Ge, Sn, and Pb.

[Page 10, beginning at line 18, please amend the paragraph to read as follows:

C<sup>4</sup>  
A tenth aspect of the present invention is a printing plate material as in any of the first to seventh aspects, in which the surface of the coat layer has hydrophobicity in terms of a water contact angle of at least 50° in its initial state and is converted to a hydrophilic surface having a water contact angle of 10° or less by irradiation with light having a wavelength at an energy level higher than a band gap energy level of the titanium oxide photocatalyst.

[Page 16, beginning at line 17, please amend the paragraph to read as follows:

C<sup>5</sup>  
With this construction, the surface of the coat layer which contains a portion which is hydrophilic is made hydrophobic by light irradiation thereon and an electrochemical treatment thereon in combination. Then, the printing plate material can be considered to have become one equivalent to the printing plate material of the seventeenth aspect, i.e., the

C5  
(concluded)

printing plate material is in an initial state again. This means that the printing plate materials can be recycled.

Page 19, beginning at line 23, please amend the paragraph to read as follows:

A twenty-eighth aspect of the present invention is a printing plate material as in the twenty-fourth aspect, in which the metal other than titanium is a group VIB or IVA metal or an oxide thereof.

C6

Page 19, beginning at the last line, please amend the paragraph to read as follows:

A twenty-ninth aspect of the present invention is a printing plate material as in the twenty-eighth aspect, in which the group VIB metal is any of W, Mo, and Cr.

Page 20, beginning at line 3, please amend the paragraph to read as follows:

do D11

A thirtieth aspect of the present invention is a printing plate material as in the twenty-eighth aspect, in which the group VIB metal is any of Ge, Sn, and Pb.

Page 25, beginning at line 13, please amend the paragraph to read as follows:

C7

Forty-third aspect of the present invention is a method for renewing a printing plate material as in the printing plate material of the first aspect, the method comprising the steps of:

Page 33, beginning at line 20, please amend the paragraph to read as follows:

C8

The expression "an initial state of the printing plate material as prepared" can be interpreted as meaning the time of initiation in an actual printing process. More specifically, it indicates a state where, for any given image, digitized data thereof are already provided and an image from the data is being written onto the printing plate material. However, the stage at which the digitized data are provided may be after the hydrophobization treatment in respect of the surface of the coat layer 3 as described later on and the statement just above should not be construed in a strict sense. That is, when the "initial state of the printing plate material as

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(concluded)

prepared" is defined as the "time of initiation in an actual printing process," such should be interpreted in a broad sense.

Page 36, beginning at line 6, please amend the paragraph to read as follows:

C<sup>9</sup>

When the treatment thus far is over, a hydrophobic printing ink is coated onto the surface of the coat layer 3. Then, for example, a printing plate material as shown in Fig. 4 is prepared. In Fig. 4, the hatched portion is a portion where the above hydrophilization treatment has not been performed, that is the hydrophobic portion, and hence indicates a printing image portion 4 where a printing ink is adhered. The remaining background portion 5, that is, the hydrophilic portion, repels the printing ink and hence indicates a non-printing image portion where no adhesion of the printing ink has occurred. Emergence of a picture pattern in this manner allows the surface of the coat layer 3 to function as a master plate.

Page 43, beginning at line 8, please amend the paragraph to read as follows:

C<sup>10</sup>

The process for renewing the printing plate after completion of the printing as described above was performed as follows. First the plate cleaning apparatus 14 was brought into contact with the plate cylinder 11 and the ink and dampening water adhered to the surface of the printing plate were wiped off. Thereafter, the plate cleaning apparatus 14 was released from the plate cylinder 11 and the coating apparatus 12 was brought into contact with the plate cylinder 11. By so doing, the coat layer 3 was being renewed on the printing plate material. Thereafter, the coating apparatus 12 was released from the plate cylinder 11, followed by operating the drying apparatus 17 to evaporate the solvents, etc., contained in the coat layer 3. Then, an image was written on the renewed surface of the coat layer 3 with ultraviolet rays emitted by the writing apparatus 15 based on digital data of the image provided in advance. After completion of the above steps, the inking roller 16 and the blanket cylinder 13 were brought into contact with the plate cylinder 11. Then paper 18 was fed so as

C 10  
(concluded)

to make contact with the blanket cylinder 13 and to be carried in the direction of the arrow as shown in Fig. 11 so that continuous printing could be performed.

Page 49, beginning at line 17, please amend the paragraph to read as follows:

C 11

The irradiation with ultraviolet rays decomposes the compound constituting the coating layer 24 as also shown in 23 Fig. 8, causing the surface of the coat layer 23 to emerge and converting the surface to have hydrophilicity. This is attributable to the effect of the titanium oxide photocatalyst. Since the decomposition of the compound proceeds by the inherent catalytic effect of the titanium oxide photocatalyst, it is completed very quickly. This puts the region of the surface of the coat layer 23 irradiated with ultraviolet rays in a state of having a water contact angle of  $10^\circ$  or less. This state is exactly opposite the state of the hydrophobic surface in the coating layer 24 described earlier. That is, water spreads on the surface of the coat layer 23 almost in the form of a film whereas it is impossible for a printing ink to adhere on the surface thereof.

Page 50, beginning at line 13, please amend the paragraph to read as follows:

C 12

When the treatment thus far is over, a hydrophobic printing ink is coated onto the surface of the coating layer 24 or the hydrophilization treated coat layer 23. Then, for example, a printing plate material as shown in Fig. 9 is prepared. In Fig. 9, the hatched portion is a portion where the above hydrophilization treatment has not been performed, that is the hydrophobic portion or a portion where the coating layer 24 remains and hence indicates a printing image portion where printing ink is adhered. The remaining non-imaged portion, that is, the hydrophilic portion 25 or the portion where the surface of the coat layer 23 emerges, repels the printing ink and hence indicates a non-printing image portion where no adhesion of the printing ink has occurred. Emergence of a picture pattern in this manner allows the printing plate material to function as a master plate.

C<sup>13</sup>  
[Page 59, beginning at line 3, please amend the paragraph to read as follows:

In the present embodiment, the intermediate layer 22 was provided between the substrate 21 and the coat layer 23. However, the present invention is not limited thereto. That is, the intermediate layer 22 does not have to be provided. This is because the major essential features of the present invention are not harmed by the absence of the intermediate layer 22 as will be apparent from the explanation thus far made.

C<sup>14</sup>  
[Page 60, beginning at line 22, please amend the paragraph to read as follows:

The group VIB and IVA metals or metal oxides may be contained in the surface of the titanium oxide photocatalyst or in the photocatalyst phase. However, it is preferable that they be contained in the surface of the titanium photocatalyst. For example, in the case where the group VIB and IVA metal is contained in the surface of the titanium oxide photocatalyst, the group VIB and IVA metal can be incorporated into the surface of the titanium oxide photocatalyst by impregnating the surface of the titanium oxide photocatalyst with a solution containing the group VIB and IVA metal, and thereafter heat-treating the titanium oxide photocatalyst.

[Page 61, beginning at line 6, please amend the paragraph to read as follows:

An example of a solution containing a group VIB metal is an aqueous ammonia solution of tungstic acid, molybdic acid, or chromic acid. Examples of solutions containing group IVA metal are an aqueous solution of tin nitrate ( $\text{Sn}(\text{NO}_3)_4$ ), an acetone solution of germanium acetate ( $\text{Ge}(\text{CH}_3\text{COO})_4$ ), and an aqueous ammonia solution of lead nitrate ( $\text{Pb}(\text{NO}_3)_2$ ). However, the solution containing group VIB or IVA metal is not limited to these examples.

[Page 61, beginning at line 14, please amend the paragraph to read as follows:

C 14  
(concluded)

The amount of the group VIB or IVA metal or its metal oxide added is 0.5 to 50% by weight, preferably 1 to 30% by weight, with respect to the amount of the titanium oxide photocatalyst. If this amount is less than 1%, it is difficult to bring out the effect of the addition the group VIB and IVA metal or its metal oxide. If the amount exceeds 500, the photocatalytic action inherent to titanium oxide is weakened.

✓ Page 62, beginning at line 25, please amend the paragraph to read as follows:

C 15

In addition, since a group VIB or IVA metal or its oxide n is added to the titanium oxide photocatalyst in order to increase the sensitivity of the plate material, the function of the titanium oxide photocatalyst to decompose organic substances is lower than that in the case of a photocatalyst with 100% titanium oxide. Accordingly, a compound which can sufficiently hydrophobize the hydrophilic portion in the surface of the plate material with a small amount and which can be easily decomposed and removed by the action of the titanium oxide photocatalyst is particularly preferable.

Page 71, beginning at line 3, please amend the paragraph to read as follows:

C 16

In order to perform the above-described printing and renewal of the plate in a printing machine, a printing machine 30 (printing apparatus) as shown in Fig. 13 is preferably used. Specifically, the printing machine 30 comprises a plate cleaning apparatus 32 (cleaning apparatus), a hydrophobization treatment apparatus 33 (renewal apparatus), a writing apparatus 34, a drying apparatus 35, an inking roller 36, a dampening water supplying apparatus 37, and a blanket cylinder 38 around a plate cylinder 31 in the center. The printing plate material is arranged wound around the plate cylinder 11.

Page 87, beginning at line 25 to page 88, line 5, please amend the paragraph to read as follows: